

What is claimed is:

- Sub B1
- 5 1. A method of detecting nucleic acid fragments in plural samples which comprises the steps of:
- attaching an electroconductive label to nucleic acid fragments in one sample and attaching another electroconductive label to nucleic acid fragments in another sample, the former electroconductive label and the latter
- 10 electroconductive label having oxidation-reduction potentials differing from each other;
- preparing a mixture of the samples containing nucleic acid fragments to which electroconductive labels are attached;
- 15 bringing the mixture into contact with an electroconductive microarray having plural electrodes onto which probe molecules complementary to the nucleic acid fragments are fixed, so that hybridization between the nucleic acid fragments having electroconductive labels and the
- 20 probe molecules on the electroconductive microarray can proceed to form hybrid structures on the electrodes;
- applying to the electrode an electric potential corresponding to the oxidation-reduction potential of the former electroconductive label and detecting on the electrode an electric current flowing along the hybrid structure;
- 25 applying to the electrode an electric potential corresponding to the oxidation-reduction potential of the latter electroconductive label and detecting on the electrode an electric current flowing along the hybrid structure;
- 30 and
- comparing the electric current detected in the former detecting procedure and the electric current detected
- 35 in the latter detecting procedure.

2. The method of claim 1, wherein the probe molecules are nucleic acid fragments.

3. The method of claim 1, wherein the probe molecules are peptide nucleic acid fragments.

4. The method of claim 1, wherein the oxidation-reduction potential of the latter electroconductive label differs from the oxidation-reduction potential of the former electroconductive label by at least 50 mV.

5. The method of claim 4, wherein the oxidation-reduction potential of the former electroconductive label and the oxidation-reduction potential of the latter electroconductive label both are in the range of 0 to 800 mV.

6. The method of claim 1, wherein the detections of electric current on the electrode are conducted by differential pulse voltamography.

7. The method of claim 1, wherein one sample is obtained from normal cells and another sample is obtained from abnormal cells corresponding to the normal cells.

8. The method of claim 1, wherein one sample is obtained from wild strain and another sample is mutant thereof.